Digital and Streaming Video: The Eccles Library Digital Video Studio

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So you want to make digital video?

- First decision: do you need it?
- Second decision: who is your audience?
- Third decision: what is your delivery method?
- Fourth decision: what format is most suitable?

Digital Video: Necessary?

- Digital video production is extremely time consuming
- Digital video can add value when visual information is necessary
  - Exam procedures or interview techniques
  - Dissection or surgical procedures
  - Lectures and demonstrations

Digital Video: Audience!

- Who are your viewers?
  - Attention span?
- Where are your viewers?
  - On campus - high speed network
  - Off campus - slower connection
  - In classroom - no network connection

Digital Video: Delivery

- How will you deliver your video?
- Internet?
  - Streamed or not
- CD-ROM
- DVD

Digital Video: format

- QuickTime (MOV)
- RealMedia (RM)
- MPEG (MPG)
- Windows Media (ASF)
- Video for Windows (AVI)
- Others

QuickTime (.mov)

- Well suited for Web, CD, or DVD
- Mac and Windows
- Interactive features
- Client is also editing and production tool
- Streaming capabilities
- Scalable with “alternate” movies
- High quality is possible

RealMedia (.rm)

- Well suited for Web
- Mac and Windows
- Streaming capabilities
- Scalable
- Very small files sizes
- Quality variable

MPEG (.mpg)

- MPEG 1, 2, 4
- Well suited for CD or DVD
- Multi-platform
- Streaming capabilities
- Medium to very high quality
- Generally requires high data rates
- Not good for general Internet use

Windows Media (.asf)

- For delivery via Web or CD
- Streaming capabilities
- Scalable
- Scripting features
- Large file sizes

Video for Windows (.avi)

- Best for CD
- Windows only
- Large files
- Medium to high quality
- No longer supported by Microsoft

Demonstration

- Quicktime
- RealMedia
- MPEG
- AVI
- Comparison

File sizes for various formats

- 10 second animation:
  RM - 327 KB
  MOV - 379 KB
  MPG - 1.3 MB
  ASF - 10 MB

File sizes for various formats

- 17 second clip:

RM - 545 KB
MOV - 1.5 MB

File sizes for various formats

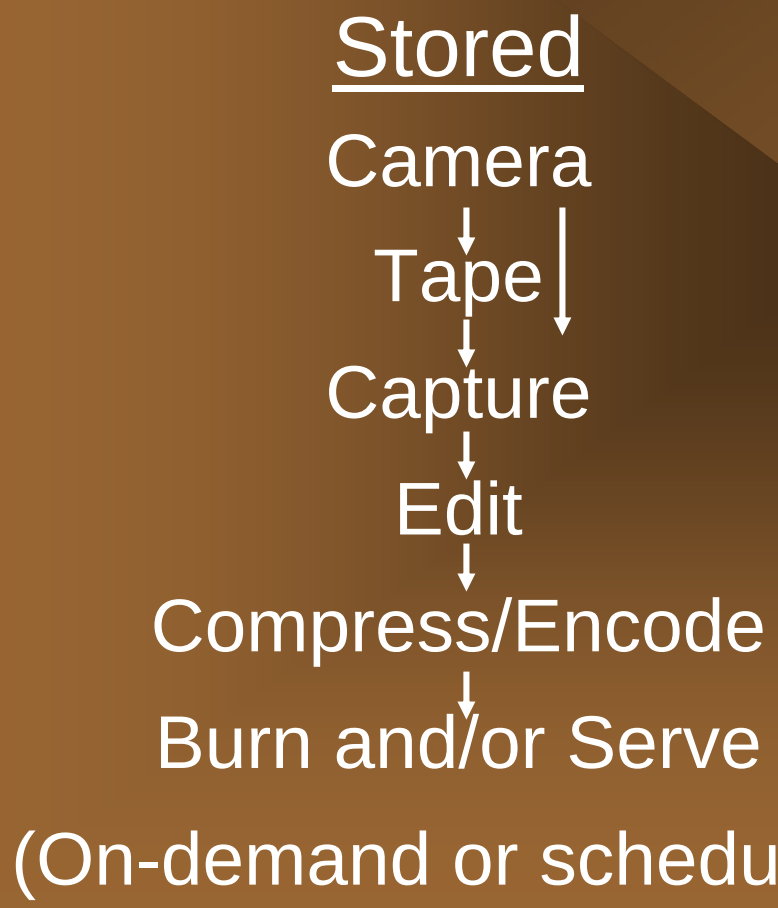
- 2 minute, 50 second clip:

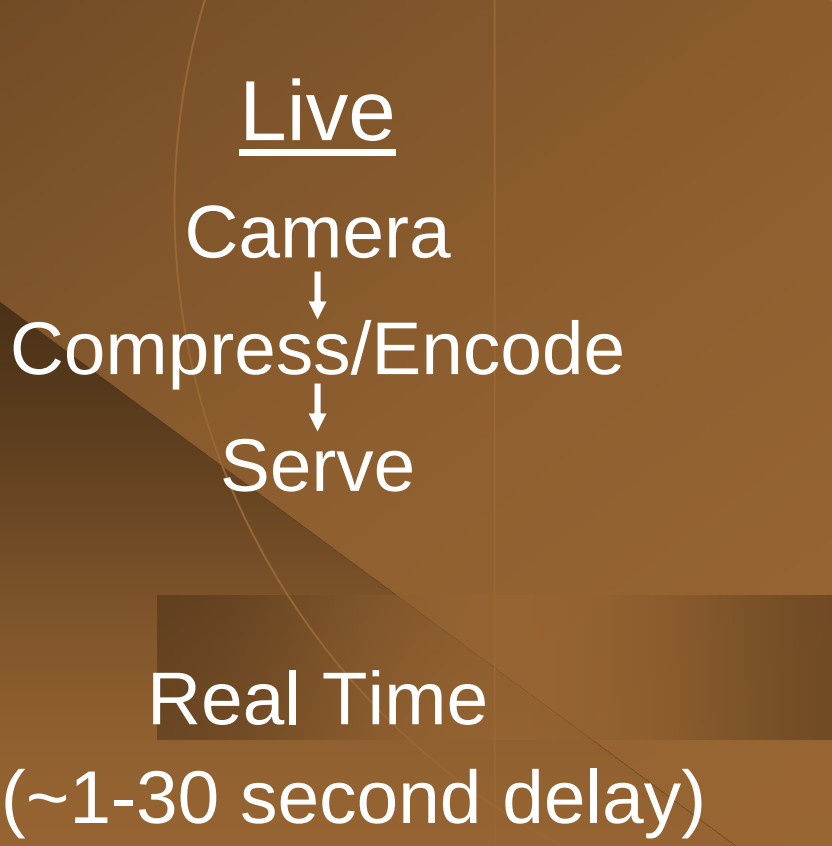
  RM - 5.3 MB
  MOV - 14 MB

What is “streaming” video?

- To "stream" video, the client (video player) on the user's PC continually requests video data from a server
- The user does not have to wait for the entire file to download before viewing
- View as a continuous data stream
- Unicast vs multicast - requires network support, router configuration

Overview of the digital video creation process





Digital video creation: source

- GIGO - Garbage in, garbage out
- Start with highest quality original
- Ideally, shoot original with digital camera
- Can encode from 1/2” or 3/4’ VHS

Digital video creation: capture

- Requires PC or Mac with video capture card
- Converts analog video signal to digital signal
- Requires software - Adobe Premiere, MovieRecorder
- Raw capture footage is ENORMOUS!
  - 1 - 20 MB per second
  - Must be compressed (encoded) to deliver

Digital video creation: edit

- Requires fast PC or Mac with large storage drive
- Requires video editing software
  - Adobe Premiere, Avid Cinema, or Strata's VideoShop
  - Use time line to order clips, add transitions and effects
  - Export for later compression
  - Archive pre-compression video

Digital video creation: compress

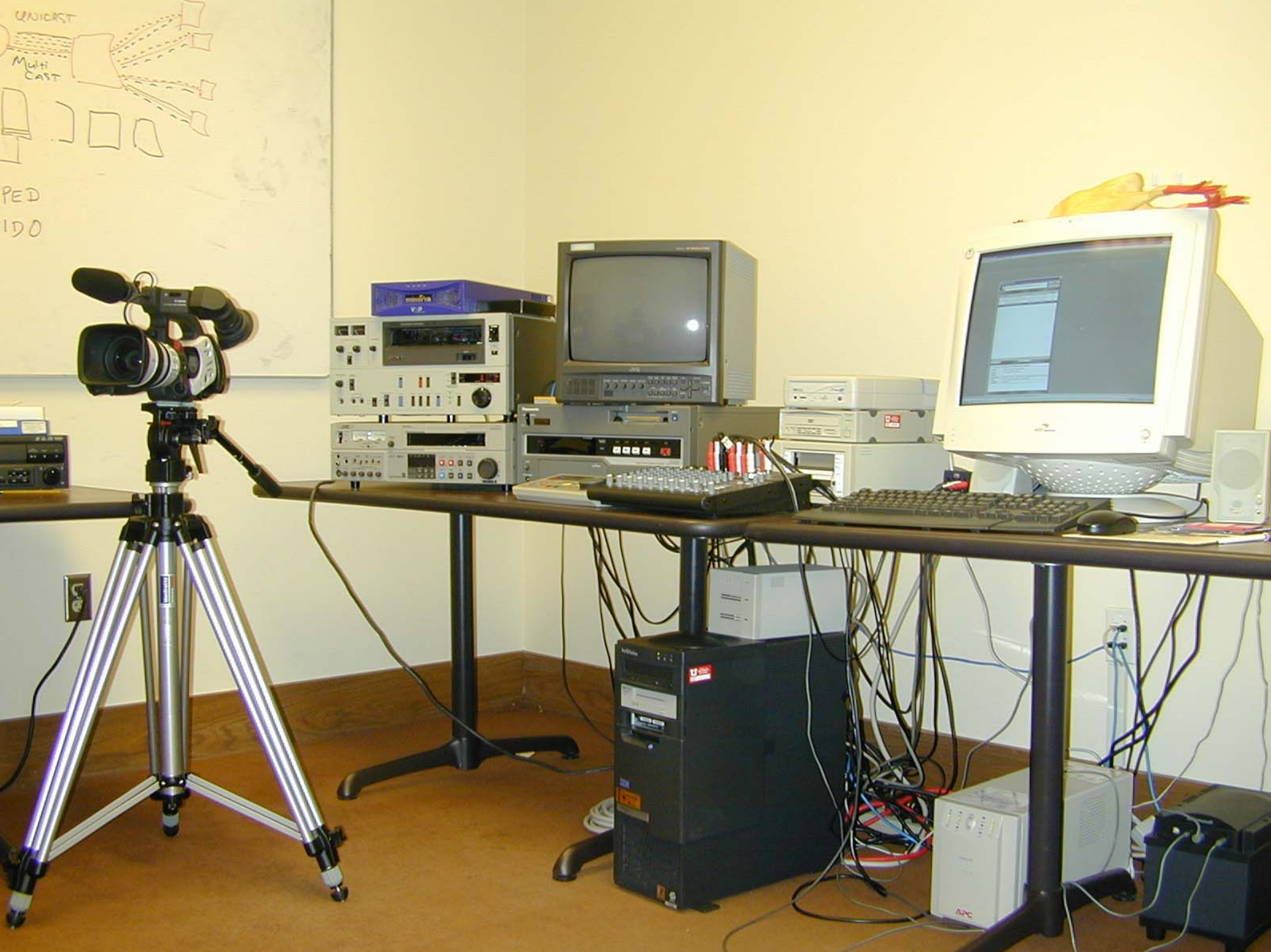
- Requires fast PC or Mac with large storage drive
- Requires video compression software (encoder)
  - Media Cleaner Pro
  - Select format
  - Set appropriate settings
- Very time consuming
  - 1 minute clip - 10 -30 minutes to compress

Digital video creation: deliver

- Depending on your needs:
  - Mount on server and link to Web page
  - Burn to CD to play on your computer
  - Burn to DVD (requires building of interface)
- Viewer must have appropriate software (client) to view the video

Demonstration

- Summer Student Projects
  - Neurologic Exams
    Intro exam, Eye Exam
  - NeuroOphthalmology - Eye Movement Disorders
- Lectures
  - Infofair 2000
- Coming soon:
  - Diabetes education program
  - Patient education workshop
  - Clifford Lynch at the Priscilla Mayden Lecture 11/9/00


UNICAST
MULTI CAST
PED
IDO

Eccles Library Video Studio

- SGI WebFORCE Mediabase VideoServer
- Real Media Server 7
- Minerva VNP 151 Encoder
- Canon XLI Digital Video Camcorder
- IBM Intellistation Video Editing workstation
- Various input devices

Facilitate Creation of Video Content

- Goal: Provide tools for experimenting with video content creation
  - Create specialized visual content
  - Broadcast of special events/speakers
  - Storing and Replay events/speakers
  - Distance & Continuing Education
  - Supplement to existing curriculum
  - On-demand review
  - Other...

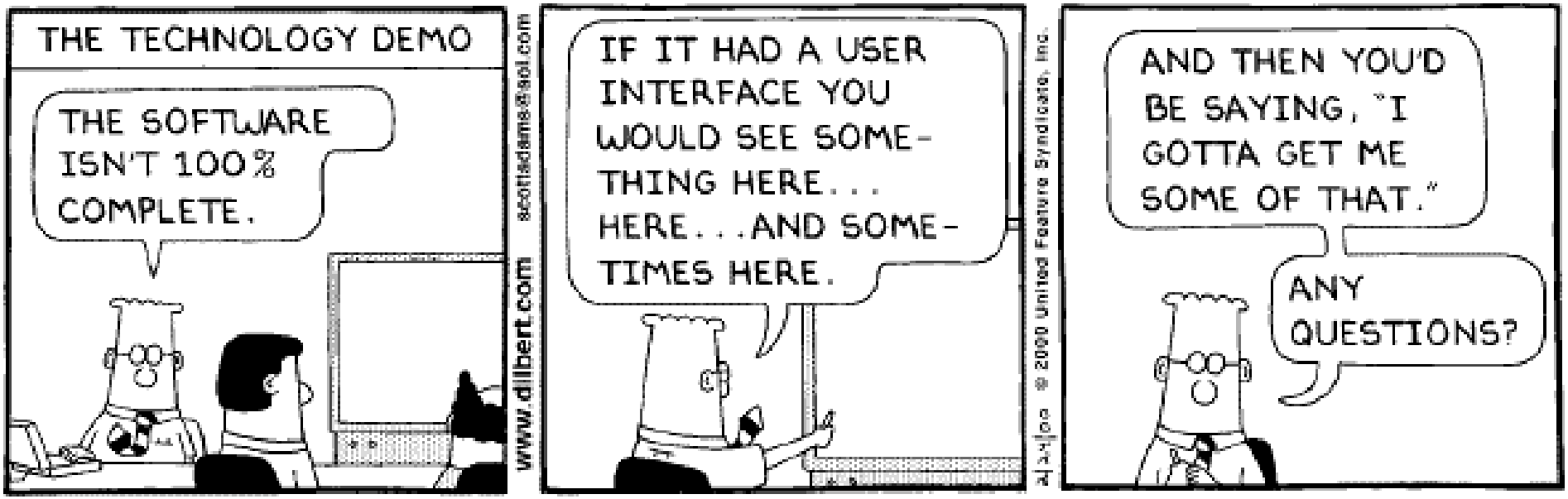
Mediabase Hardware Components

- SGI Origin 200 server
- Dual processors 180 MHz w/2 MB Cache
- RAM: 512 MB
- 172 GB storage
- Approx 200 hours MPEG-1 video

Mediabase Software Components

- Irix OS (Unix)
- MediaBase 4.0.1
- Informix - relational database system
- Netscape FastTrack Server
- RealNetworks G2 server
- Unlimited streaming capability – actuality, about 100 simultaneous streams

MediaBase server not currently running



Minerva VNP 151 Encoder

- MPEG Encoding
- Encode from tape or live camera
- Real time capture and distribution
- Web administration tool

Canon XLI Digital Video Camcorder

- Interchangeable lens Mini DV camcorder
- Highly accurate color reproduction and detail
- Four Channel Digital Audio System
- Firewire port for direct video capture from MiniDV tape to editing station

RealServer Hardware Components

- Dell PowerEdge 1300
- Dual Pentium III 500MHz w/512K Cache
- RAM: 256MB
- 18GB Storage

RealServer Software Components

- Microsoft Windows NT Server 4.0
- RealServer 7.0 - Streaming media server
- RealProducer - software to prepare streaming audio and video
- RealPresenter - converts PowerPoint slides to streaming video and audio

Video Editing Components - Hardware

- IBM Intellistation Video Editing Workstation
- Video capture card / firewire port
- 70 GB Disk Array
- CD and DVD burners
- 1/2”, 3/4” VHS player/recorders
- Videodisc player
- DVC Pro tape player/recorder

Video Editing Components - Software

Adobe Premiere - video editing

Media Cleaner Pro - video compression

Minerva Impression - DVD authoring

Adobe Photoshop - image editing

Questions?